

REMARKS

Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Claims 1, 19, 20 and 21 have been amended. Support for the amendments to claims 1, 19 and 20 can be found at least in the specification on page 6, lines 6-13, page 8 lines 10-14, and in FIG. 2. Claim 21 has been amended to be in independent form, without narrowing its scope. No new matter has been added.

This amendment change claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending the claims as set forth above, claims 1, 3-7 and 9-21 are now pending in this application.

Rejection under 35 U.S.C. § 103

Claims 1, 3-7 and 9-21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Publication No. 2003/0169160 to Barros et al. (hereafter “Barros”) in view of U.S. Patent No. 6,520,690 to Chu (hereafter “Chu”). Applicant respectfully traverses this rejection for at least the following reasons.

Independent claims 1, 19 and 20

Independent claim 1, as amended, recites: “an image capturing unit including an image capturing window which is disposed slightly downward”, and “a visible-light emitting unit including a lens, the visible-light emitting unit is configured to emit visible light, wherein the lens is disposed in a substantially horizontal direction, wherein the image capturing unit is mounted on a front side of a body of the vehicle while the visible-light emitting unit is mounted on a rear side of the body with respect to the image capturing unit.” Barros and Chu fail to disclose or suggest the arrangement of the image capturing unit and window, and visible-light emitting unit and lens as recited in claim 1, or its advantages in reducing blooming or halation.

The Office Action recognizes that Barros does not disclose the arrangement of the visible light emitting unit and image capturing unit, but relies on Chu for suggesting this feature in Barros. Applicant submits, however, that Barros does not suggest the arrangement of the image capturing unit and window, and visible-light emitting unit and lens as recited in claim 1, as amended.

With respect to the arrangement of the image capturing and visible-light emitting unit, the Office Action states on page 7 “the figures of Chu clearly show that the camera 3 is located in front of the light source 31 and would therefore not have any visible light entering into the camera.” Chu, however, does not show or suggest an arrangement with the combination of “an image capturing window [of the image capturing unit] . . . is disposed slightly downward”, and “the lens [of the visible light-emitting unit] is disposed in a substantially horizontal direction” and “wherein the image capturing unit is mounted on a front side of a body of the vehicle while the visible-light emitting unit is mounted on a rear side of the body with respect to the image capturing unit.”

Moreover, Barros and Chu do not suggest the advantages in reducing blooming or halation for the arrangement of the image capturing unit and window, and visible-light emitting unit and lens as recited in claim 1. Rather, it is apparent for the structure of Chu as shown in Fig. 3, that a portion of the visible light emitted by the bulb 31 is reflected from the surface of the transparent cover 41, and thus the visible light reflected from the surface of the transparent cover 41 would enter into the camera 3 causing blooming or halation. Such blooming or halation is prevented in the arrangement of claim 1, where “an image capturing window [of the image capturing unit] . . . is disposed slightly downward”, and “the lens [of the visible light-emitting unit] is disposed in a substantially horizontal direction” and “wherein the image capturing unit is mounted on a front side of a body of the vehicle while the visible-light emitting unit is mounted on a rear side of the body with respect to the image capturing unit.”

Dependent claims 19 and 20 each recite “an image capturing unit including an image capturing window which is disposed slightly downward; and a visible-light emitting unit

including a lens, the visible-light emitting unit is configured to emit visible light, wherein the lens is disposed in a substantially horizontal direction, wherein the image capturing unit is mounted on a front side of a body of the vehicle while the visible-light emitting unit is mounted on a rear side of the body with respect to the image capturing unit” and are thus patentable for reasons analogous to those discussed above with respect to claim 1.

The dependent claims ultimately depend from claim 1, and are patentable for at least the same reasons, as well as for further patentable features recited therein.

Independent claim 21

Independent claim 21 recites the feature of “the image capturing unit captures information in an image capturing range, and the infrared emitting unit includes an infrared radiation distribution controller that controls distribution of the infrared radiation emitted within a predetermined range which is substantially the same as or wider than the image capturing range.” Nowhere does Chu or Barros suggest this feature. The Office Action on page 3 cites to Chu at col. 2, lines 45-48 for allegedly disclosing “wherein the image capturing unit captures information in an image capturing range with visible light emitted within a predetermined range which is substantially the same as or wider than the image capturing unit.” By contrast, claim 21 requires that the “infrared radiation emitted within a predetermined range which is substantially the same as or wider than the image capturing range”, not visible light emitted. Moreover, col. 2, lines 45-48 of Chu does not disclose that its camera lens 3 captures information in a range, where the light emitted from its bulb 31 has a range as wide or wider than the range of the camera lens.

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment,

to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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